Project Summary

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Public Affairs Office Ž 3909 Halls Ferry Road Ž Vicksburg, MS 39180-6199 Ž (601) 634-2504 Ž http://www.wes.army.mil

Cone Penetrometer Multiport Sampler

Technical Contacts: Mr. Daniel A. Leavell (GG-S) (601) 634-2496
Mr. Landris T. Lee, Jr. (GG-F) (601) 634-2661

Technology: The Multiport Sampler was designed and developed under the Waterways Experiment Station (WES) Site Characterization and Analysis Penetrometer System (SCAPS) Program sponsored by the U.S. Army Environmental Center (AEC) to obtain multiple subterranean soil vapor and/or liquid samples during a single penetration. A series of vertically stacked sampling modules are independently controlled for sampling at desired depths. Cross-contamination between samples is minimized.

Benefits: Multiple sampling conducted during a single penetration contributes to faster and more economical sampling during the site characterization and screening phase. Soil vapor and/or soil liquid samples are obtained with minimal labor, equipment requirements, exposure, and cross-contamination. Samples may be processed either by interfacing with appropriate analytical instrumentation or through the use of contaminant traps which can be analyzed off site.

Applications: The Multiport Sampler is attached to a cone penetrometer and is used for obtaining multiple soil vapor and/or soil liquid samples for analysis, as described above.

Capabilities: The current maximum penetration depth is 75 ft. At any depth, one or more of the sampling modules are opened to allow infiltration of soil vapor and/or liquid. The samples are processed as required and withdrawal grouting for hole selling is performed.

Limitations: Applications are limited to normally consolidated soils, and are not appropriate for consolidated/cemented materials, cobbles, or rocky strata. Additionally, use is not applicable for steep slopes or wetland areas due to cone penetrometer truck mobility limitations. The sampler is not presently configured for obtaining soil samples; it is limited to soil vapor and soil liquid samples.

Requirements: The sampler requires a direct-push (cone penetrometer) vehicle equipped with pushpipe rods and equipment. It also requires a compressed air and vacuum source for sampler operation.

Program Management:	Mr. George Robitaille (TS-C) U.S. Army Environmental Center Aberdeen Proving Ground, MD (410) 671-1576	Mr. John Ballard (EE-P) ERDC Environmental Lab Vicksburg, MS (601) 634-2592